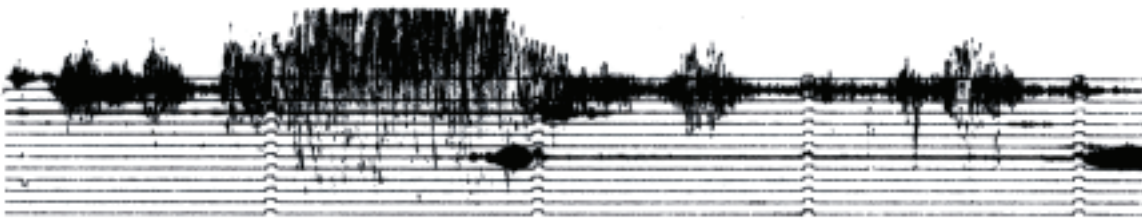
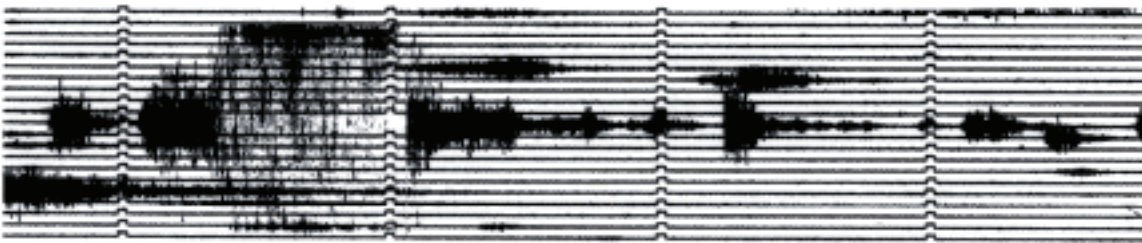


Seismic Signatures

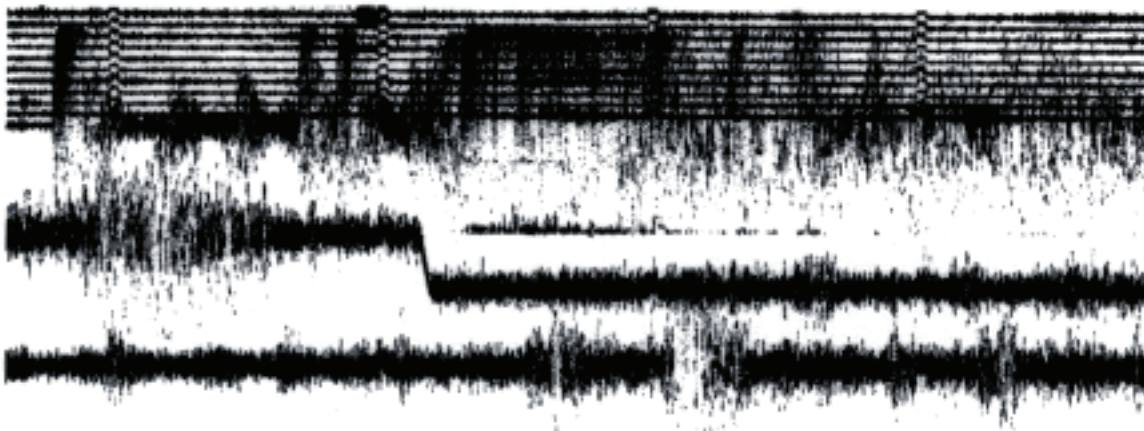
Seismic signatures from individual events during the 1989-91 series of explosion-like seismic events are similar to those associated with confirmed ash-producing explosions in April-May 1986. Sections of the seismic record during two of the 1989-91 events and one of the April-May 1986 events show some of the similarities. Tick-marks on the records are one minute apart; adjacent traces are 15 minutes apart. All three signals are from YEL seismometer (in the crater breach north of the dome).



A. Seismic signature of a confirmed ash-producing explosion during April-May 1986. This explosion, which occurred on April 18, 1986, was observed by scientists in the field. The event sent an ash plume to about 1,850 meters above the volcano and peppered the crater floor with ballistic blocks.



B. Signature of a small event from the 1989-91 series of explosion-like seismic events. This event, which occurred on September 14, 1990, was not observed, and no evidence of its occurrence was found when scientists visited the crater 6 days later. The seismic signature is typical of many of the smaller explosion-like signals in the 1989-91 series.



C. Signature of a large event from the 1989-91 series of explosion-like seismic events. This explosion, which occurred on December 7, 1989, was not observed, but instruments in the crater recorded deformation of the dome during the event, and ash was found in the crater several days later. The spacing between 15-minute lines was widened during the event in order to preserve the signature. This signature is similar to those from the smaller events, although higher in over-all amplitude and longer in duration. Plumes were confirmed during several of the larger events, but at least three did not generate a steam or ash plume.